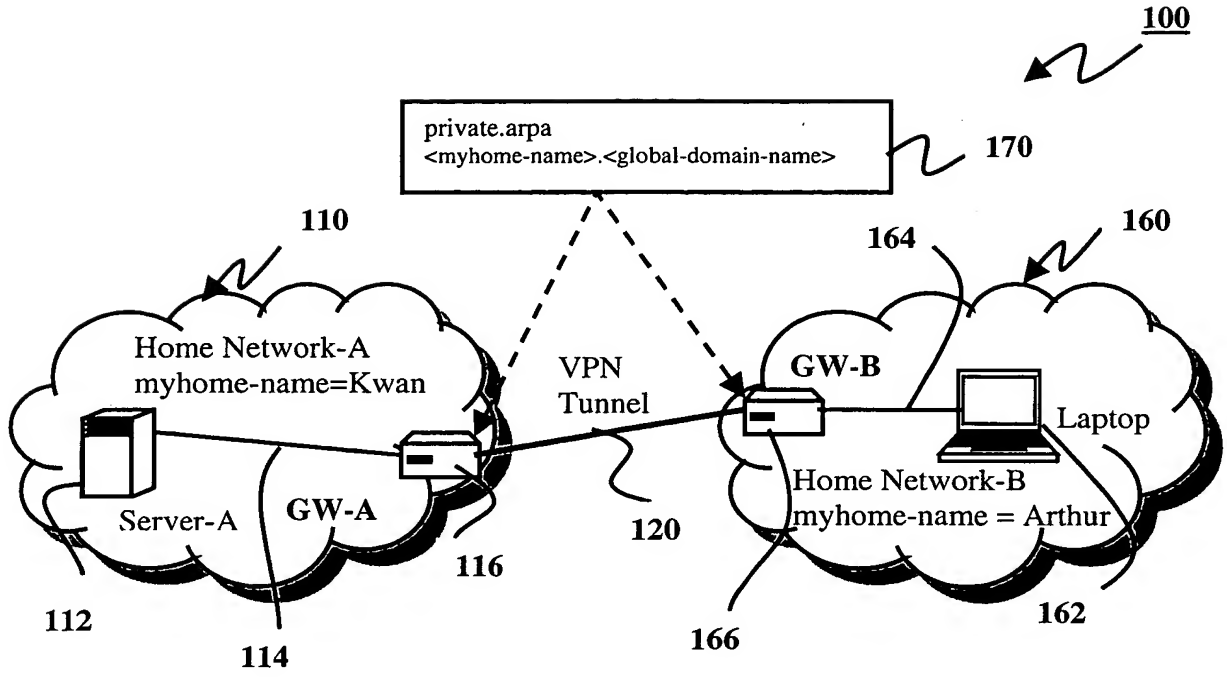
100
private.arpa
<myhome-name>.<global-domain-name>
170
110
164
160
Home Network-A
myhome-name=Kwan
VPN
Tunnel
GW-B
Laptop
Server-A
GW-A
Home Network-B
myhome-name = Arthur
120
116
112
114
166
162

FIG. 1

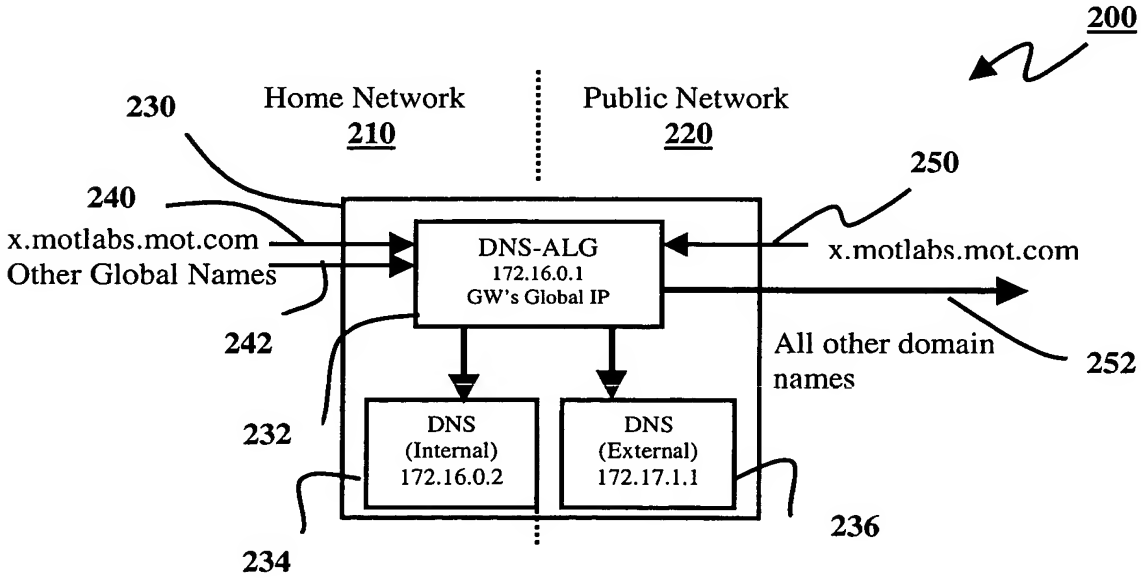
200
230
Home Network
210
Public Network
220
250
240
x.motlabs.mot.com
Other Global Names
DNS-ALG
172.16.0.1
GW's Global IP
x.motlabs.mot.com
242
All other domain
names
252
232
DNS
(Internal)
172.16.0.2
DNS
(External)
172.17.1.1
236
234

FIG. 2

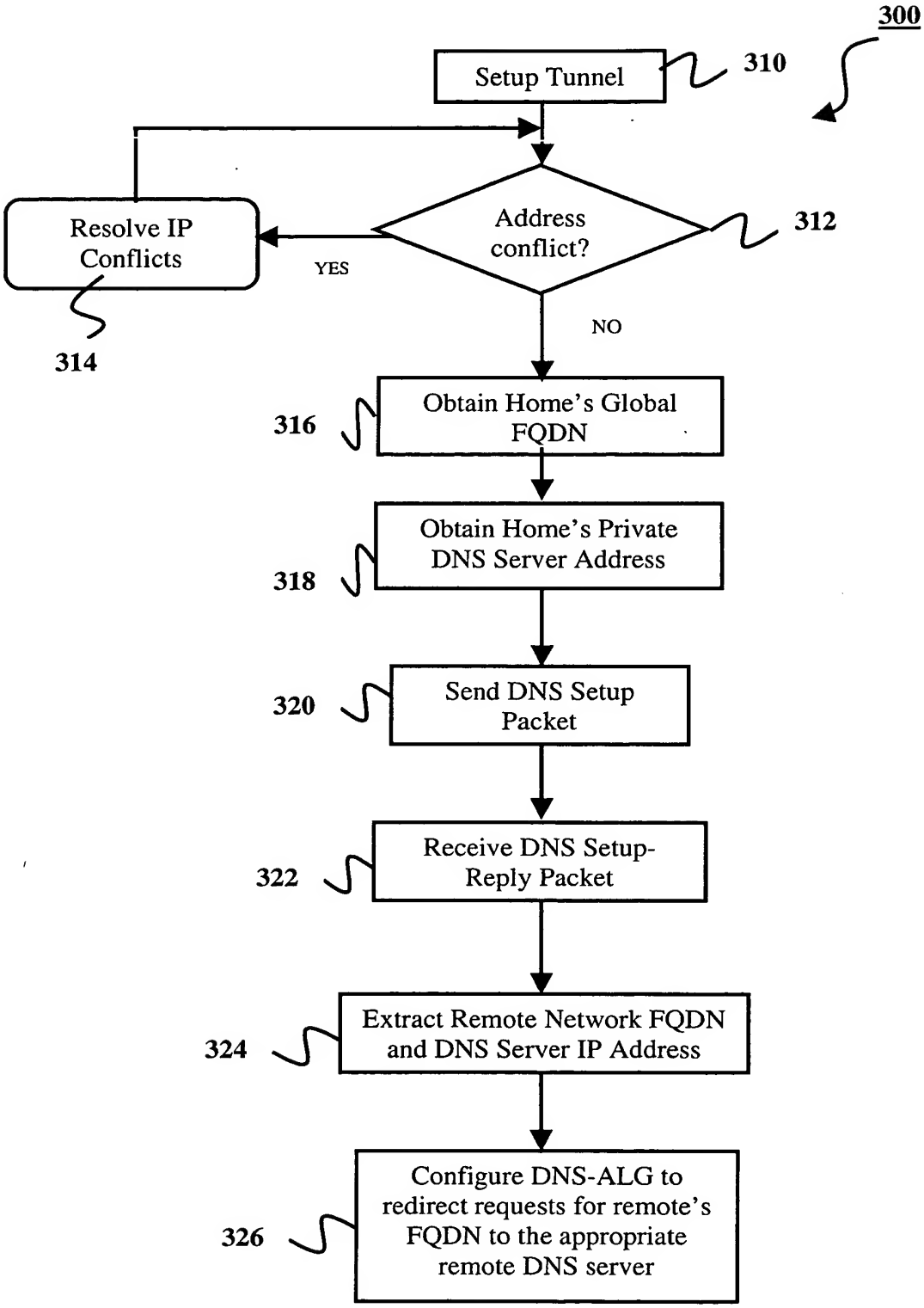
300
Setup Tunnel
310
Address conflict?
312
YES
Resolve IP Conflicts
314
NO
316
Obtain Home's Global FQDN
318
Obtain Home's Private DNS Server Address
320
Send DNS Setup Packet
322
Receive DNS Setup-Reply Packet
324
Extract Remote Network FQDN and DNS Server IP Address
326
Configure DNS-ALG to redirect requests for remote's FQDN to the appropriate remote DNS server

FIG. 3

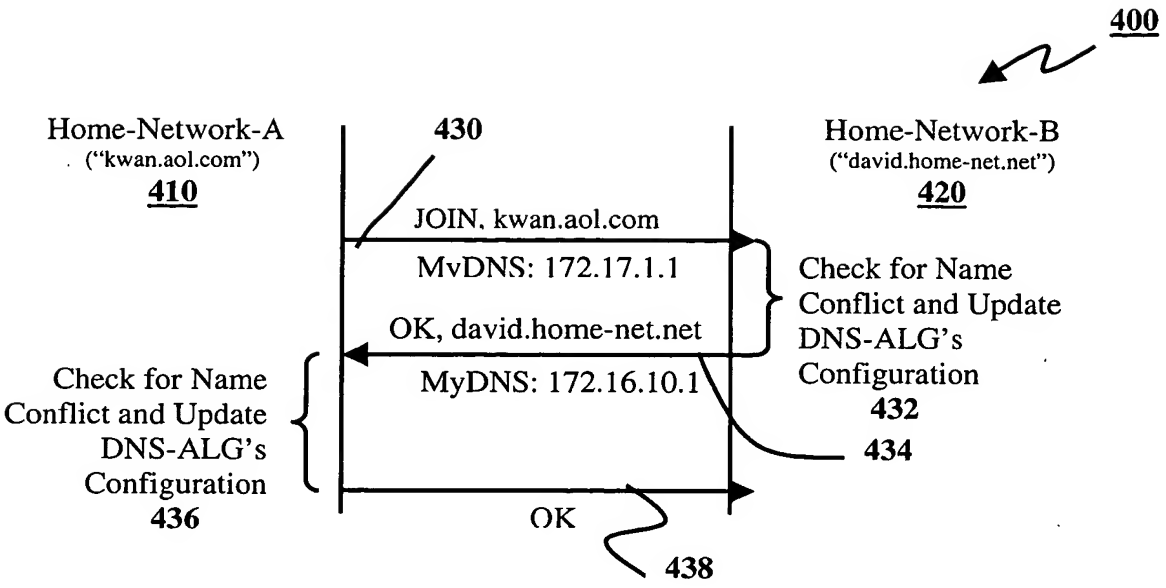
400
Home-Network-A
("kwan.aol.com")
410
430
Home-Network-B
("david.home-net.net")
420
JOIN, kwan.aol.com
MvDNS: 172.17.1.1
Check for Name
Conflict and Update
DNS-ALG's
Configuration
OK, david.home-net.net
MyDNS: 172.16.10.1
Check for Name
Conflict and Update
DNS-ALG's
Configuration
436
432
434
OK
438

FIG. 4

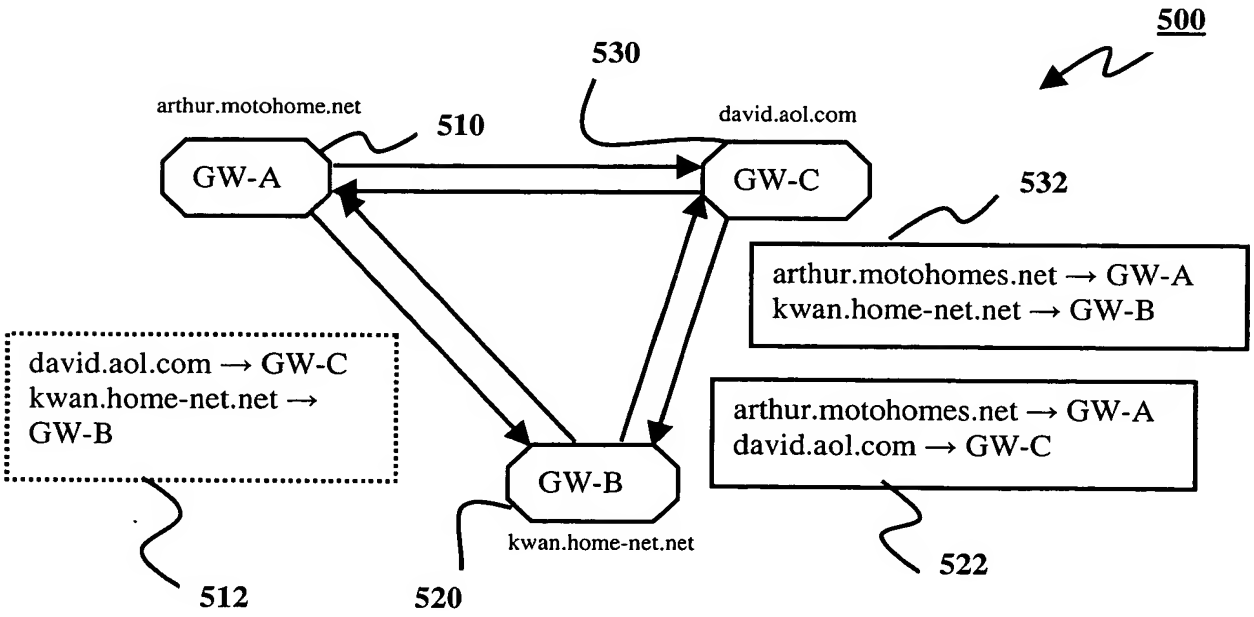
500
530
arthur.motohome.net
510
david.aol.com
GW-A
GW-C
532
arthur.motohomes.net → GW-A
kwan.home-net.net → GW-B
david.aol.com → GW-C
kwan.home-net.net →
GW-B
arthur.motohomes.net → GW-A
david.aol.com → GW-C
GW-B
kwan.home-net.net
512
520
522

FIG. 5

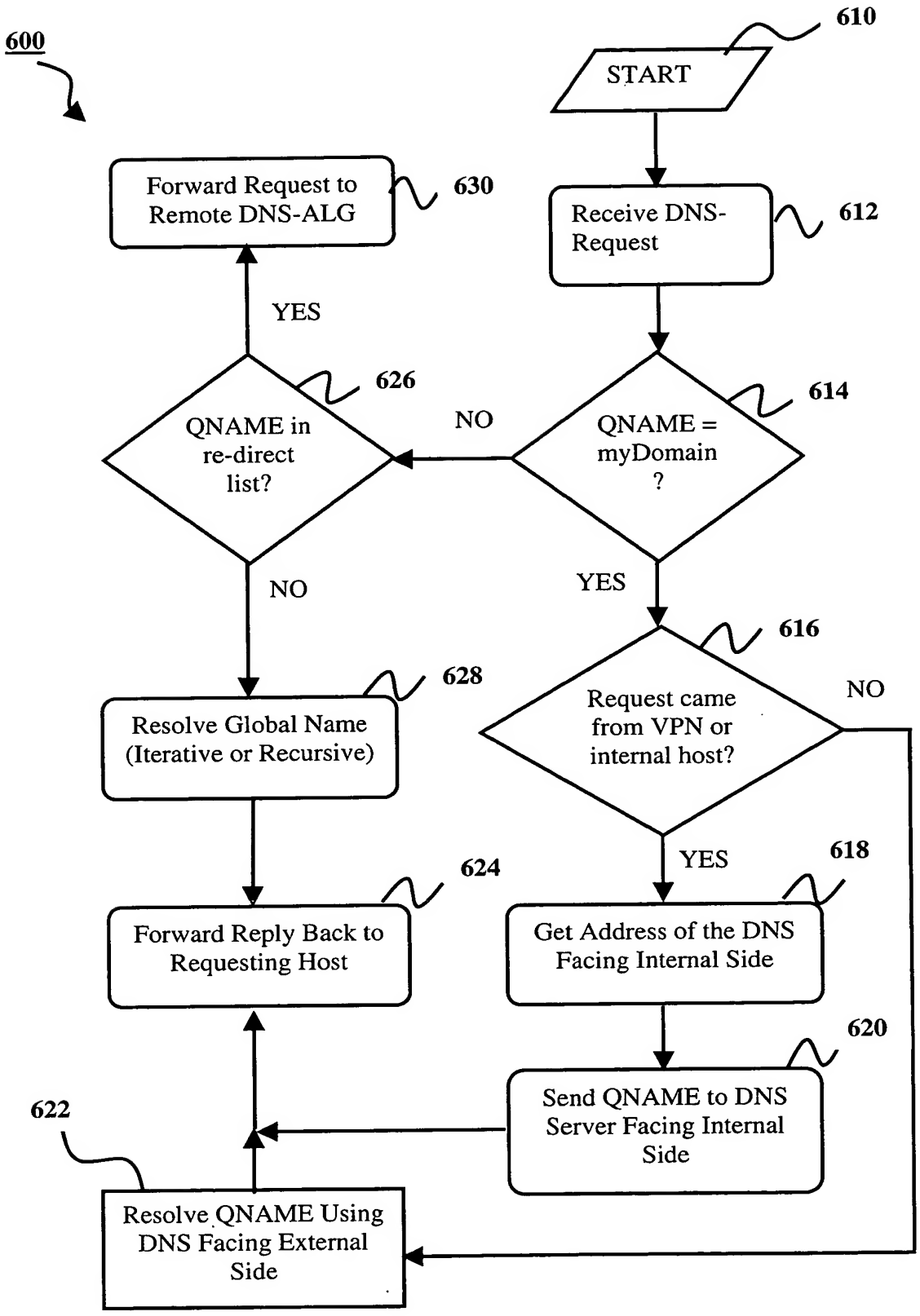
600
610
START
Receive DNS-Request
612
QNAME = myDomain ?
614
NO
QNAME in re-direct list?
626
YES
Forward Request to Remote DNS-ALG
630
NO
Resolve Global Name (Iterative or Recursive)
628
YES
Request came from VPN or internal host?
616
NO
YES
Get Address of the DNS Facing Internal Side
618
Send QNAME to DNS Server Facing Internal Side
620
Forward Reply Back to Requesting Host
624
622
Resolve QNAME Using DNS Facing External Side

FIG. 6

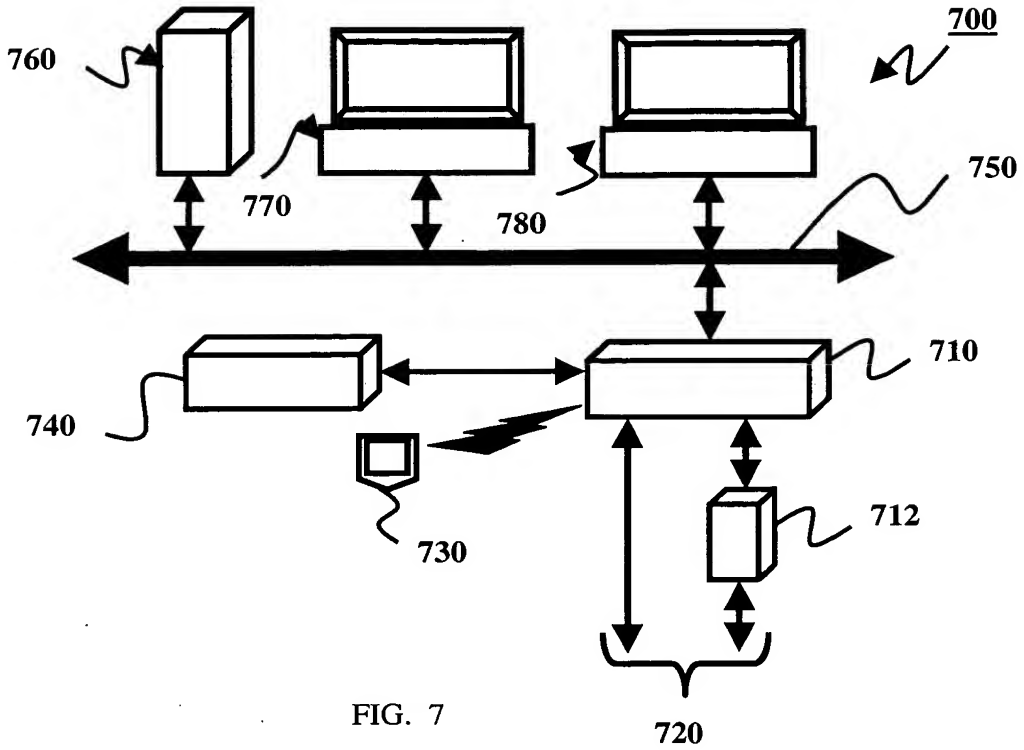
760
700
770
780
750
710
740
730
712
720

FIG. 7

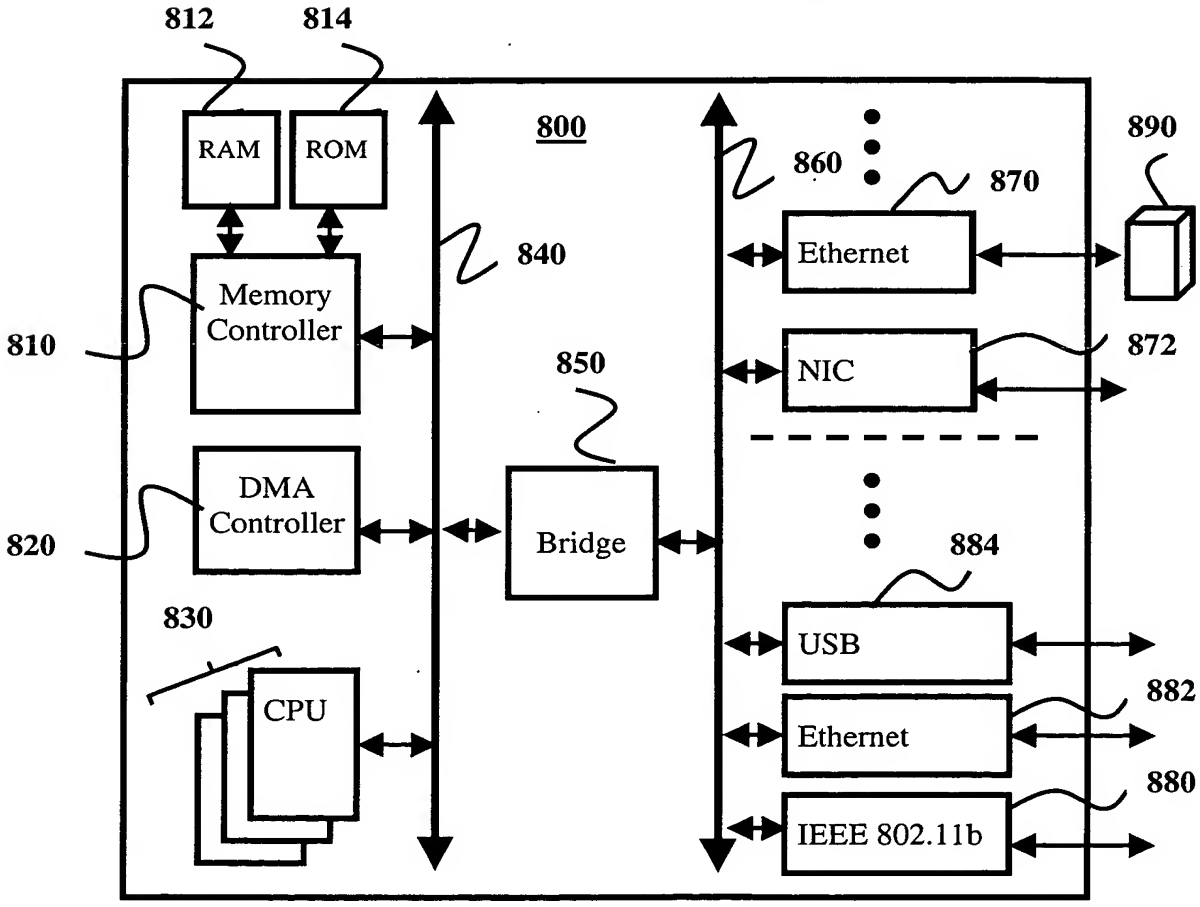
812
814
800
RAM
ROM
Memory Controller
810
840
850
DMA Controller
820
Bridge
830
CPU
860
870
890
Ethernet
NIC
872
884
USB
882
Ethernet
880
IEEE 802.11b

FIG. 8

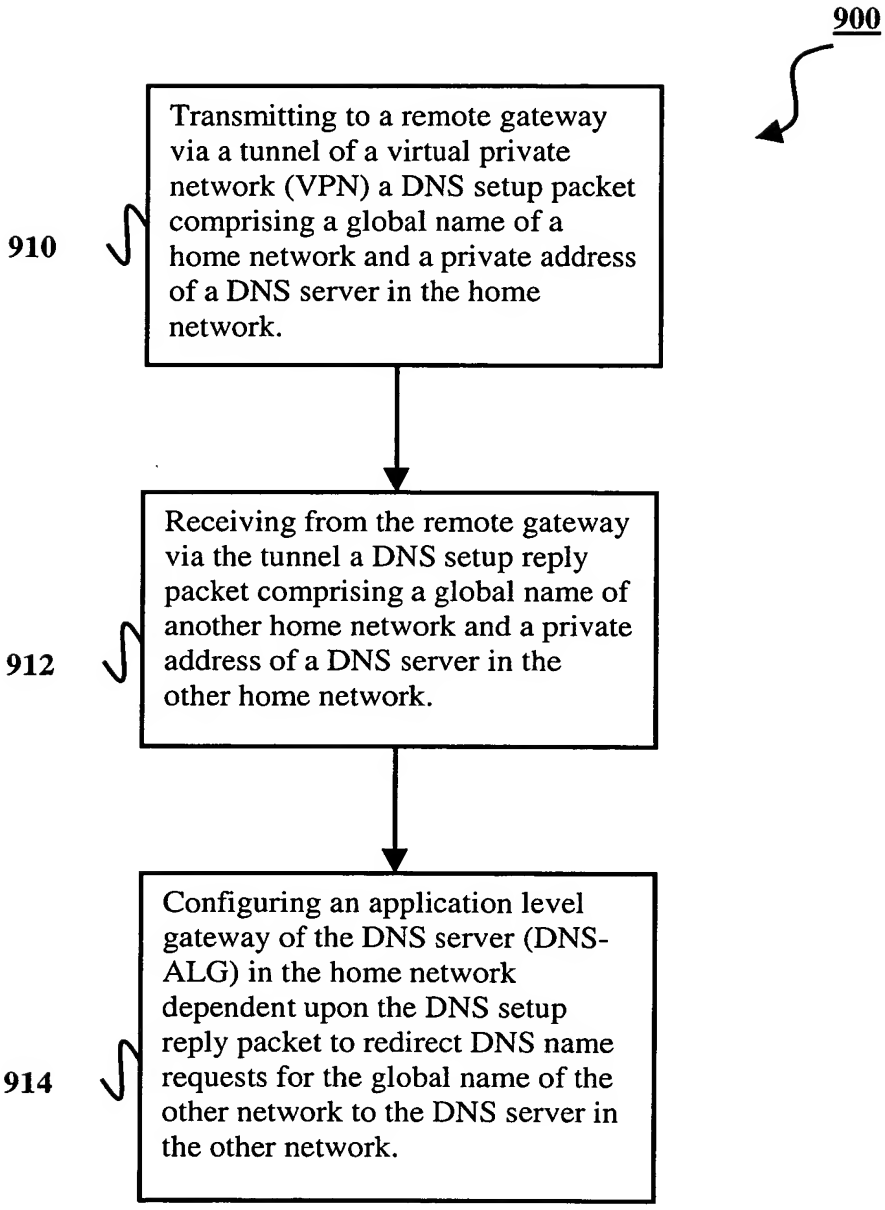
900
Transmitting to a remote gateway via a tunnel of a virtual private network (VPN) a DNS setup packet comprising a global name of a home network and a private address of a DNS server in the home network.
910
Receiving from the remote gateway via the tunnel a DNS setup reply packet comprising a global name of another home network and a private address of a DNS server in the other home network.
912
Configuring an application level gateway of the DNS server (DNS-ALG) in the home network dependent upon the DNS setup reply packet to redirect DNS name requests for the global name of the other network to the DNS server in the other network.
914

FIG. 9

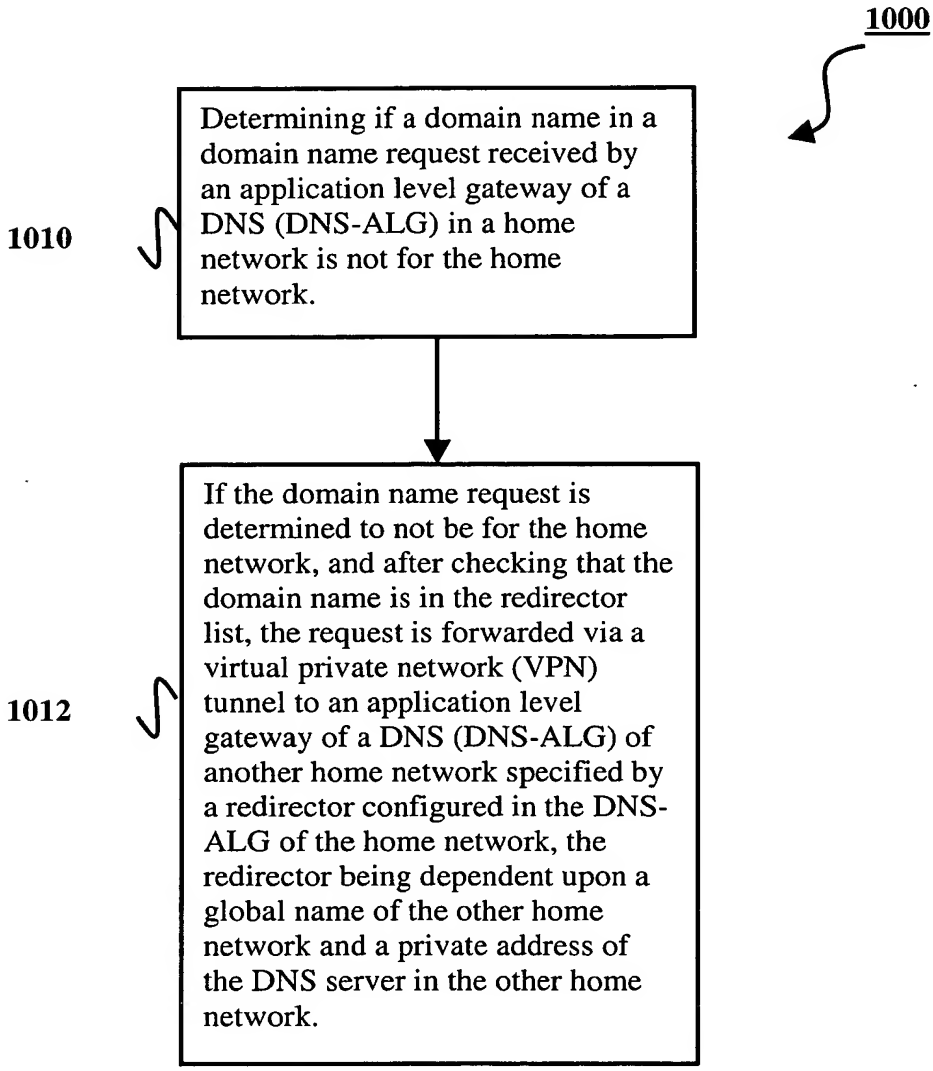
1000
Determining if a domain name in a domain name request received by an application level gateway of a DNS (DNS-ALG) in a home network is not for the home network.
1010
If the domain name request is determined to not be for the home network, and after checking that the domain name is in the redirector list, the request is forwarded via a virtual private network (VPN) tunnel to an application level gateway of a DNS (DNS-ALG) of another home network specified by a redirector configured in the DNS-ALG of the home network, the redirector being dependent upon a global name of the other home network and a private address of the DNS server in the other home network.
1012

FIG. 10